CLAIM AMENDMENTS

Please amend the claims as follows:

Claims 1-8 (cancelled).

9. (currently amended) A method of imaging a wafer or a reticle to find defects, comprising:
   a) exposing a multi-pixel area of said wafer or said reticle to an influx of photons, said photons having an energy selected to cause photoelectrons to leave ~~the~~ surface of said wafer or said reticle,
   b) focusing said photoelectrons to create an image of said area of said wafer or said reticle in ~~the~~ a plane of a detector, and
   c) detecting said photoelectrons, thereby imaging ~~a portion~~ said area of said wafer or said reticle.

10. (currently amended) The method of Claim 9, further comprising:
   d) processing the image to detect defects ~~or~~ and to classify defects.

11. (original) The method of Claim 10, wherein
   a) said wafer or reticle comprises at least two materials, and
   b) said photons have an energy selected to increase the difference in photoelectron yield between at least two of said materials.

12. (original) The method of Claim 10, wherein said influx of photons is oriented at a 90 degree angle to the substrate.

13. (original) The method of Claim 10, wherein said influx of photons is oriented at an angle of less than 90 degrees to the substrate.

14. (original) The method of Claim 10, wherein said influx of photons is vertically polarized.

15. (currently amended) The method of Claim 10, wherein said influx of photons is horizontally polarized.

Claims 16-35 (cancelled).

36. (currently amended) A method of imaging a substrate, comprising:
    a) exposing an area of said substrate to an influx of photons, said photons having an energy selected to cause photoelectrons to leave said substrate,
    b) exposing said area of said substrate to an influx of electrons, said electrons having both an energy and a current density profile selected to maintain surface charge present on said substrate at a predetermined level,
    c) focusing said photoelectrons to create an image of said area of said substrate in ~~the~~ a plane of a detector, and
    d) detecting said photoelectrons, thereby imaging ~~a portion~~ said area of said substrate.

37. (original) The method of Claim 36, wherein
    a) said substrate comprises at least two materials, and
    b) said photons have an energy selected to increase the difference in photoelectron yield between at least two of said materials.

38. (original) The method of Claim 36, wherein said substrate is concurrently exposed to said influx of photons and said influx of electrons.

39. (original) The method of Claim 36, wherein said substrate is alternately exposed to said influx of photons and said influx of electrons.

40. (original) The method of Claim 36, wherein said substrate is exposed to said influx of photons over a first area, said substrate is exposed to said influx of electrons over a second area, and said first area is substantially contained within said second area.

41. (original) The method of Claim 36, further comprising the additional step interposed between step b) and step c):
    a) filtering the flux of photoelectrons and electrons reflected from the surface of said substrate in order to select said photoelectrons, or a portion of said photoelectrons, and to reject most or all of said reflected electrons.

42. (currently amended) The method of Claim ~~37~~ 41, wherein said filtering is achieved by selecting said photoelectrons based on their angular distribution from said surface of said substrate.

43. (original) The method of Claim 36, wherein
    a) said surface of said substrate comprises at least two materials, and
    b) said photons have an energy selected to increase the difference in photoelectron yield between at least two of said materials.

44. (original) The method of Claim 36, wherein said influx of photons is oriented at a 90 degree angle to the substrate.

45. (original) The method of Claim 36, wherein said influx of photons is oriented at an angle of less than 90 degrees to the substrate.

46. (original) The method of Claim 36, wherein said influx of photons is vertically polarized.

47. (currently amended) The method of Claim 36, wherein said influx of photons is horizontally polarized.

48. (currently amended) A method of imaging a substrate, comprising:
    a) exposing said substrate to an influx of photons, said photons having an energy selected to cause photoelectrons to leave said substrate,
    b) exposing said substrate to an influx of electrons, said electrons having both an energy and a current density profile selected to maintain surface charge present on said substrate at a predetermined level,
    c) focusing the portion of said influx of electrons which are reflected from said substrate to create an image of said substrate in ~~the~~ a plane of a detector, and
    d) detecting the portion of said influx of electrons which are reflected from said substrate, thereby imaging a portion of said substrate.

49. (original) The method of Claim 48, wherein said substrate is concurrently exposed to said influx of photons and said influx of electrons.

50. (original) The method of Claim 48, wherein said substrate is alternately exposed to said influx of photons and said influx of electrons.

51. (original) The method of Claim 48, wherein said substrate is exposed to said influx of photons over a first area, said substrate is exposed to said influx of electrons over a second area, and said first area is substantially contained within said second area.

52. (original) The method of Claim 48, further comprising the additional step interposed between step b) and step c):

    a) filtering the flux of photoelectrons and electrons reflected from the surface of said substrate in order to select said reflected electrons, or a portion of said reflected electrons, and to reject most or all of said photoelectrons.

53. (original) The method of Claim 52, wherein said filtering is achieved by selecting said photoelectrons based on their angular distribution from said surface of said substrate.

54. (currently amended) The method of Claim 53, wherein said filtering rejects most or all reflected electrons which are reflected at or near [the] a specular angle and selects most or all reflected electrons which are scattered away from the specular angle.

55. (currently amended) A method of imaging a substrate, comprising:

    a) exposing said substrate to an influx of photons, said photons having an energy selected to cause photoelectrons to leave said substrate,

    b) exposing said substrate to an influx of electrons, said electrons having both an energy and a current density profile selected to maintain surface charge present on said substrate at a predetermined level,

    c) focusing the portion of said influx of electrons which are reflected from said substrate to create an image of said substrate in ~~the~~ a plane of a detector,

    d) focusing said photoelectrons in the plane of a detector, and

    e) detecting said photoelectrons and reflected electrons, thereby imaging a portion of said substrate.

56. (original) The method of Claim 55, further comprising:

a) filtering said reflected and said photoelectrons to reject most or all of said reflected electrons which are reflected at or near the specular angle and most or all of said photoelectrons which are emitted perpendicular to the surface of the substrate, and to select most or all of said reflected electrons which are scattered away from the specular angle and/or most or all of said photoelectrons which are emitted at angles other than perpendicular to the surface of the substrate.

57. (original) A method of identifying the chemical composition of a defect on a wafer or a reticle, comprising:

a) exposing said defect to an influx of photons, said photons having an energy below the energy required to cause photoelectrons to leave said defect,

b) increasing the energy of said photons in discrete steps,

c) monitoring the photoelectron yield from said defect after each step, and

d) identifying the chemical composition of said defect on the basis of the photon energy at which said photoelectron yield increases substantially.

Claims 58-60 (cancelled).

61. (currently amended) A method of imaging a substrate, comprising:

a) exposing said substrate to an influx of relatively high-energy electrons, said high-energy electrons having an energy selected to cause secondary electrons to leave said substrate,

b) exposing said substrate to an influx of relatively low-energy electrons, said electrons having both an energy and a current density profile selected to maintain surface charge present on said substrate at a predetermined level,

c) filtering the flux of said secondary electrons and said low-energy electrons reflected from the surface of said substrate in order to select most or all of said secondary electrons, or a portion of said secondary electrons, and to reject most or all of said reflected electrons,

d) focusing said secondary electrons to create an image of said substrate in ~~the~~ a plane of a detector, and

e) detecting said secondary electrons, thereby imaging a portion of said substrate.

62. (original) The method of Claim 61, wherein said filtering is achieved by selecting said secondary electrons, or a portion of said secondary electrons, based on their angular distribution from the surface of said substrate.

Claims 63-65 (cancelled).

66. (currently amended) A method of imaging a substrate, comprising:
    a) exposing said substrate to an influx of relatively high-energy electrons, said high-energy electrons having an energy selected to cause secondary electrons to leave said substrate,
    b) exposing said substrate to an influx of relatively low-energy electrons, said electrons having both an energy and a current density profile selected to maintain surface charge present on said substrate at a predetermined level,
    c) filtering the flux of said secondary electrons and said low-energy electrons reflected from the surface of said substrate in order to select most or all of said reflected low-energy electrons, or a portion of said reflected low-energy electrons, and to reject most or all of said secondary electrons,
    d) focusing said reflected low-energy electrons create an image of said substrate in ~~the~~ a plane of a detector, and
    e) detecting said reflected low-energy electrons, thereby imaging a portion of said substrate.

67. (original) The method of Claim 66, wherein said filtering is achieved by selecting said reflected low-energy electrons, or a portion of said reflected low-energy electrons, based on their angular distribution from the surface of said substrate.

68. (currently amended) The method of Claim [58]66, wherein said filtering rejects most or all of said reflected low-energy electrons which are reflected at or near a specular angle and selects most or all of said reflected low-energy electrons which are scattered away from the specular angle.

69. (currently amended) A method of imaging a substrate, comprising:

a) exposing said substrate to an influx of relatively high-energy electrons, said high-energy electrons having an energy selected to cause secondary electrons to leave said substrate,

b) exposing said substrate to an influx of relatively low-energy electrons, said electrons having both an energy and a current density profile selected to maintain surface charge present on said substrate at a predetermined level,

c) filtering said secondary electrons and the portion of said relatively low-energy electrons which are reflected from the surface of said substrate, in order to select most or all of said secondary electrons which are emitted at angles other than perpendicular to the substrate and most or all of said reflected electrons which are scattered away from the specular angle, and to reject most or all of said secondary electrons which are emitted at an angle perpendicular to the substrate and most or all of said reflected electrons which are scattered at the specular angle,

d) focusing said selected secondary electrons and said selected reflected electrons to create an image of said substrate in ~~the~~ a plane of a detector, and

e) detecting said selected secondary electrons and selected reflected electrons, thereby imaging a portion of said substrate.